Claims

[c1] 1. A system, comprising:

a photoreceptor circuit;

an optical system, including an element that changes a position of image information relative to said photoreceptor circuit; and

a processing circuit, operating to produce pulsed outputs at timings that are dependent on changes of said image information.

[c2] 2. A system as in claim 1, wherein said photoreceptor circuit is formed on a semiconductor substrate, and said processing circuit is formed on the same semiconductor substrate as said photoreceptor circuit.

[c3] 3. A system as in claim 1, wherein said processing circuit includes a circuit that changes spatial variations in light intensity into temporal fluctuations formed by digital pulses.

[c4] 4. A system as in claim 3,wherein said processing circuit encodes changes in said output signal which are either in positive directions or negative directions into said digital pulses.

[c5] 5. A system as in claim 4, wherein said photoreceptor circuit includes a photoreceptor element, and a logarithmic amplifier associated with said photoreceptor element.

[c6] 6. A system as in claim 4, wherein said processing circiut includes a differentiation element, and a half wave rectification element which converts both positive and negative signals into a common level.

[c7] 7. A system as in claim 1, wherein said mechanical scanning device includes a moving reflective device.

[c8] 8. A system as in claim 7, wherein said moving reflective device includes a moving mirror.

[c9] 9. A system as in claim 1, further comprising a movement detecting device, which detects a position of movement of said photoreceptor.

[c10] 10. A system as in claim 1, wherein said mechanical scanning device includes a moving reflective device, and a movement detecting device which detects a position of said moving reflective device.

[c11] 11. A system as in claim 1, wherein the mechanical scanning device includes a moving optical element.

[c12] 12. A system as in claim 11, wherein said moving optical element includes a moving lens.

[c13] 13. A system as in claim 12, wherein said moving lens is moved by external vibration, and forms a resonant system that moves at a speed proportional to resonance in the system.

[c14] 14. A system as in claim 1, wherein there are an array of said photoreceptor circuits.

[c15] 15. A method, comprising:
acquiring image information using a first element;
using a second element to move a position of image information that is acquired by said first element;
processing said image information acquired by said first element, to obtain temporal information about said image information.

[c16] 16. A method as in claim 15, wherein said temporal information includes pulses.

[c17] 17. A method as in claim 16, further comprising using said pulses, and timing of said pulses, to determine information about said image.

[c18] 18. A system, comprising:
a photoreceptor circuit, formed on a semiconductor substrate, and including a plurality of photoreceptor elements, and a plurality of amplifiers, with an amplifier associated with each of said photoreceptor elements;
an optical position moving element, operating to change a position where an incoming image scene contacts said photoreceptor circuit; and

a processing circuit, formed on said semiconductor substrate, and having a processing part associated with each said photoreceptor element, said processing circuit producing an output indicative of information received by said photoreceptor element.

[c19] 19. A system as in claim 18, wherein said processing circuit produces information indicative of a temporal information in said photoreceptor element.

[c20] 20. A system as in claim 18, wherein said optical position moving element operates to move the position of said image scene relative to said photoreceptor circuit cyclically.

[c21] 21. A system as in claim 18, wherein said optical moving position element operates to move the position of said image scene relative to said photoreceptor circuit randomly.

[c22] 22. A system as in claim 19, wherein said amplifiers that are associated with each of said photoreceptor elements produce a logarithmically scaled output.

[c23] 23. A system as in claim 19, wherein said processing circuit half wave rectifies information indicative of the image scene, and obtains a derivative of the half wave rectified signal.

[c24] 24. A method as in claim 17, further comprising using information about phase locking of said pulses to determine information about a spatial pattern in the image.

[c25] 25. A method as in claim 17, further comprising obtaining a histogram indicating a number of spikes occurring as a function of position of a given integration time, and using said histogram to determine information about said image.

[c26] 26. A system as in claim 18, further comprising a sensor, determining a position of said optical position moving element, and wherein said processing circuit operates using information from said sensor.

[c27] 27. A system as in claim 18, wherein said optical position moving element comprises a moving reflective device.

[c28] 28. A system as in claim 27, wherein said moving reflective device includes a moving mirror.

[c29] 29. A system as in claim 28, wherein said moving mirror is rotated around a tilted axis.

[c30] 30. A system as in claim 27, further comprising a sensor element, operating to determine a position of the mirror, and wherein said processing circuit operates based on information from said sensing element.

[c31] 31. A system as in claim 27, wherein said moving reflective device includes a prism.

[c32] 32. A system as in claim 18, wherein said optical position moving element comprises an optical passing element, and at least one moving holder for said optical passing element.

[c33] 33. A system as in claim 32, wherein said optical passing element includes a lens.

[c34] 34. A system as in claim 33, wherein said moving holder includes at least one spring.

[c35] 35. A system as in claim 34, wherein the lens and spring form a resonant system, which vibrates mostly at a specified resonant rate.

[c36] 36. A system as in claim 34, wherein the springs and lens are mounted such that the lens remains at a substantially fixed distance from the photoreceptor circuit.

[c37] 37. A system as in claim 32, further comprising a measurement element, measuring a parameter relating to a distance between said optical passing element and said moving holder, to produce a signal indicative of position therebetween, and wherein said processing circuit uses said signal.

[c38] 38. A system as in claim 37, wherein said measurement element measures capacitance between said optical passing element and said at least one moving holder.

[c39] 39. A method, comprising:

moving some aspect of electromagnetic energy relative to an array of photoreceptors; and

sensing the information about said electromagnetic energy that is independent of any fixed pattern noise in said array of photoreceptors.